

1.3

Points, Lines, and Planes

Goal Use postulates and undefined terms.

VOCABULARY

Undefined terms

Point

Line

Plane

Postulate

Collinear points

Coplanar points

Coplanar lines

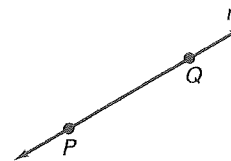
Segment, Endpoints

Ray

POSTULATE 1: TWO POINTS DETERMINE A LINE

Words Through any _____ points there is exactly one line.

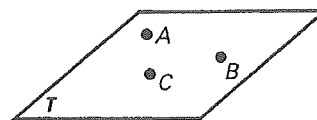
Symbols Line n passes through points P and Q .



POSTULATE 2: THREE POINTS DETERMINE A PLANE

Words Through any _____ noncollinear points there is exactly one plane.

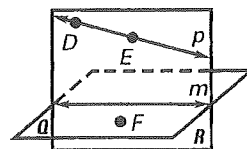
Symbols Plane T passes through points A , B , and C .



Example 1 Name Points, Lines, and Planes

Use the diagram at the right.

- Name 3 points.
- Name 2 lines.
- Name 2 planes.



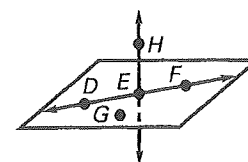
Solution

- a. _____, _____, and _____ b. _____ and _____ c. _____ and _____

Example 2 Name Collinear and Coplanar Points

Use the diagram at the right.

- Name three points that are collinear.
- Name four points that are coplanar.
- Name three points that are not collinear.



Solution

- Points _____, _____, and _____ lie on the same line. So, they are collinear.
- Points _____, _____, _____, and _____ lie on the same plane. So, they are coplanar.
- Points _____, _____, and _____ do not lie on the same line. There are many correct answers.

✓ **Checkpoint** Use the diagram shown.

1. Name two lines.

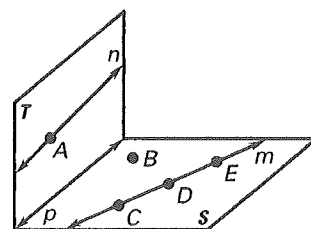
2. Name two planes.

3. Name three points that are collinear.

4. Name three points that are not collinear.

5. Name four points that are coplanar.

6. Name two lines that are coplanar.



Follow-Up Draw a diagram for each word.

LINES, SEGMENTS, AND RAYS

Word	Symbol	Diagram
line	\overleftrightarrow{AB} or \overleftrightarrow{BA}	
segment	\overline{AB} or \overline{BA}	
ray	\overrightarrow{AB} \overrightarrow{BA}	

Example 3 Draw Lines, Segments, and Rays

Draw three noncollinear points, J , K , and L . Then draw \overleftrightarrow{JK} , \overline{KL} , and \overrightarrow{LJ} .

Solution

Use the space at the right, and follow these steps.

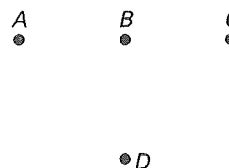
1. Draw J , K , and L so that they are not collinear.
2. Draw \overleftrightarrow{JK} .
3. Draw \overline{KL} .
4. Draw \overrightarrow{LJ} .

Follow-Up Use your drawing in Example 3 to complete the table.

	Line, segment, ray?	How many arrowheads?	Name any endpoints.
\overleftrightarrow{JK}			
\overline{KL}			
\overrightarrow{LJ}			

✓ **Checkpoint** Use the four points shown.

7. Draw \overleftrightarrow{AB} and \overleftrightarrow{AC} . Are the lines the same? Explain.



8. Draw \overline{AC} and \overline{BD} . Are the segments the same? Explain.

9. Draw \overrightarrow{CA} and \overrightarrow{CB} . Are the rays the same? Explain.